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FORMATION OF ELECTRODE FOR THIN-FILM LITHIUM BATTERY

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ABSTRACT

PURPOSE: To obtain an electrode, which has an excellent electric contact and a high mechanical adhesion, by interposing beforehand a film made of the original metal of a positive electrode material between the positive electrode material and a positive current-collecting body of a thin-film lithium battery, the positive electrode of which is prepared from a metal chalcogenide or a metal oxide.

CONSTITUTION: After a titanium film 2 with about 0.1. $\mu$ m thickness is formed on an iron plate 1 with 0.4mm thickness, TiS(sub 2) is formed on the film 2 into a film 3 of around 3. $\mu$ m thickness by the CVD method. Next, a solid electrolyte material represented by the formula, (1-X)Li(sub 4)SiO(sub 4)XLi(sub 3)PO(sub 4) (0<X<1), is formed over the film 3 into a film 4 with around 2. $\mu$ m thickness by sputtering. After that, lithium is formed on the film 4 into a film 5 with around 1. $\mu$ m thickness by a vapor-deposition method, thereby obtaining a basic structure for a thin-film lithium battery. As a result of measurement carried out in a dry atmosphere on the basic characteristics of the battery such as open-circuit voltage and short-circuit current, at room temperature, an open-circuit voltage of 2.4V and a short-circuit current of 3mA/cm(sup 2) were obtained.

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